

Post operative care implications: Total Laryngectomy

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Disclosures: No conflicts of interest



Objectives

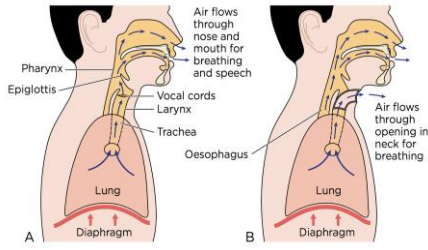
- Recognize anatomical considerations: Normal airway vs. total laryngectomy vs. tracheostomy
- Identify issues in post-operative care and type of reconstruction
- Common issues, complications and solutions
- Considerations for patient education and discharge readiness



Total Laryngectomy: Anatomy

- Altered airway
- Irreversible

FIG 1. ALTERED ANATOMY POST LARYNGECTOMY



Total Laryngectomy: Anatomy

	Laryngectomy	Tracheostomy
Stoma permanent	+	+/-
Connection to pharynx	-	+
Able to intubate orally	-	+
Separation of airway from esophagus	+	-
Risk of aspiration of oral/ nasal/ pharyngeal secretions	-	+

FIG 1. ALTERED ANATOMY POST LARYNGECTOMY



Question 1

Following a total laryngectomy, Mr. John Doe experiences respiratory failure and requires ventilatory support. Which of the following is the best way to intubate Mr Doe?

- Orotracheal intubation
- Nasotracheal intubation
- Intubate through tracheal stoma
- Perform emergent tracheostomy



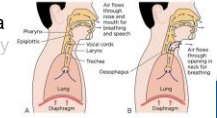
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FIG 1. ALTERED ANATOMY POST LARYNGECTOMY



Total Laryngectomy patients are Compulsory Neck Breathers



Stoma, Airway & Wound Care

- Permanent stoma sutured to skin
- Laryngectomy tube use: optional & temporary
- Clean stoma every shift: remove crusting with saline soaked gauze/ Q-tips
- Encourage deep breathing, coughing: Expel crusts, mucus plugs
- Suction with saline irrigation every shift and as needed



Stoma, Airway & Wound Care

- Use humidification: reduce crusts and mucus plugs
- Nose and mouth humidify and warm air; in laryngectomy patients, this is lost
 - Early: humidification tent
 - Later: HME filters/ foams
- Engage patient and caregiver early
- Teach self care



Stoma, Airway & Wound Care

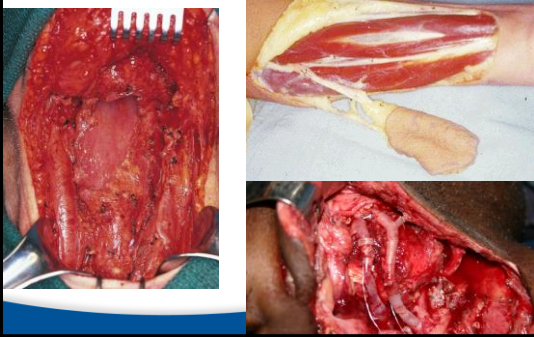
- Clean incisions every shift: remove crusting with saline soaked gauze/ Q-tips, apply topical ointment if ordered
- Monitor drains for output: amount and quality
 - Can indicate salivary leakage



Special mention:

Free flap reconstruction

for reconstruction in patient with total laryngectomy

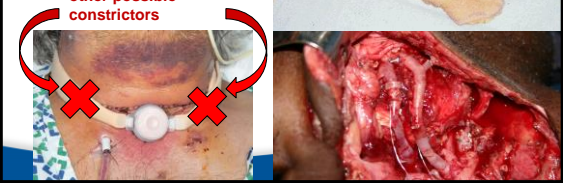


Special mention:

Free flap reconstruction

for reconstruction in patient with total laryngectomy

- Large tissue defects repaired with free flaps
- Depend on newly anastomosed vascular supply
- In such patients, **Avoid neck ties, Velcro straps or other possible constrictors**



Complication: Airway obstruction

- ORAL Intubation IMPOSSIBLE
- Ensure secure airway through the neck stoma
- High flow O2
- Early call for help
- Ensure availability of key supplies:
 - IV access
 - Suction
 - Forceps, suction catheters
 - Lighting
 - Airway supplies



Complication: Airway obstruction

- Stomal swelling/tightening
 - Usually a gradual onset
 - If airway looks very tight, Call MD
 - May place laryngectomy tube in an emergency
- Foreign body
 - Large stoma makes foreign bodies easier
 - Heimlich maneuver
 - Keep patient calm, Call MD
- Mucous Plug
 - Same signs/symptoms as with trach patient
 - Remove plug if easily visible
 - Place on high O2 and Call MD



Issue: Laryngectomy tube displacement

- NBD
- Replace tube



Question 2

Following a total laryngectomy, which of the following can contribute to airway compromise?

- a) Foreign body
- b) Mucus plug
- c) Tracheal cast/ crusts
- d) All of the above



Answer 2

Following a total laryngectomy, which of the following can contribute to airway compromise?

- a) Foreign body
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- c) Tracheal cast/ crusts
- d) All of the above**

**Total Laryngectomy patients require
Meticulous stoma and airway care**



Nutrition

- Key factor in healing and recovery
- Often with nasogastric tube or gastrostomy tube
- Early nutrition consult and enteral feeding
- Do not manipulate/ replace NG tube:
 - Risk to disrupt new pharynx closure



Resumption of oral intake

- Timing of oral intake depends on:
 - Patient anatomy & type of reconstruction
 - Post surgical course
 - H/O neck radiation
 - Surgeon preference
- H/O radiation may contribute to poor healing: resume oral diet in 14 days
- No h/o radiation: resume oral diet in 5- 7 days
- Leak test/ radiocontrast swallow study may be requested



Controversies in timing of resuming oral intake

The Journal of Laryngology & Otology (2009), 123, 333–338.
Early oral feeding following total laryngectomy

J ASWANI, M THANDAR, J OTTIL, J FAGAN

TABLE III
PHARYNGOCUTANEOUS FISTULA DEVELOPMENT IN EARLY VS DELAYED ORAL FEEDING GROUPS

Parameter	Feeding		p
	Early	Delayed	
Patients (n)	40	39	
Fistulae (n (%))	8 (20)	6 (15.4)	0.8247
Median fistula diagnosis day	11	14	0.389

TABLE VI
STUDIES OF EARLY VS DELAYED POSTLARYNGECTOMY FEEDING, AND META-ANALYSIS

Feeding	Pts (n)	Fistula rate (%)	p
<i>Madras & Khalil¹⁶ (USA)</i>			
Early	55	3.6	0.229
Delayed	18	11	
<i>Song et al.¹⁴ (China)</i>			
Early	21	4.8	0.555
Delayed	21	9.5	
<i>Soren et al.² (Turkey)</i>			
Early	32	6.2	0.671
Delayed	33	9	
<i>Current study (South Africa)</i>			
Early	40	20	0.593
Delayed	39	15.4	
<i>Meta-analysis</i>			
Early	148	8.8*	0.442
Delayed	111	11.7*	

*13/148 patients; †13/111 patients. Pts = patients

Controversies in timing of resuming oral intake

Head Neck, 2014 May 11. doi:10.1002/hed.23755. [Epub ahead of print]
Early oral feeding following total laryngectomy: A systematic review.
Aires FT¹, Dedivitis RA, Petramalha SM, Bernardo WM, Carneia CR, Brandão LG

- Early oral feeding Vs Delayed Feeding
- Four RCTs~ 180 patients
 - No significant difference
 - Fistula rate (6.7% Vs 10%)
- Four cohort studies~ 490 patients
 - No significant difference
 - Fistula rate (12.2% Vs 10.1%)

Unclear if timing of feeding affects rate of fistula formation

Controversies in timing of resuming oral intake

Laryngoscope. 2012 August ; 122(8): 1796–1799. doi:10.1002/lary.23443.

Assessment and Incidence of Salivary Leak Following Laryngectomy

Hilliary N. White, MD, Blake Golden, MD, Larissa Sweeny, MD, William R. Carroll, MD, Jeffery S. Magnuson, MD, and Eben L. Rosenthal, MD
From the Department of Surgery, Division of Otolaryngology—Head and Neck Surgery, University of Alabama at Birmingham, Birmingham, Alabama, U.S.A

Barium swallow @ 1 week
Sensitivity 26%
Specificity 94%

Positive test suggests a leak
Negative test: may still have a leak, maintain clinical vigilance

Complication: Pharyngocutaneous Fistula

- Breakdown of pharyngeal closure -> Salivary leak/ fistula
- Features s/o neck infection
 - Fever
 - Redness
 - Firm induration, tenderness
 - Cloudy/ purulent drainage
 - Breakdown of incisions

Complication: Pharyngocutaneous Fistula

- Manage conservatively when fistula drainage controlled
 - Drainage
 - Wet to dry dressing/ wound vacs (selective cases)
 - ABX
 - Supportive care (nutrition/ wound care etc.)
- Reoperative interventions (selectively)
 - Debridement
 - Tissue transfer
- Possible complications
 - Sepsis/ Cellulitis/ Mediastinitis
 - Vascular exposure/ Bleeding
 - Death

OTOLARYNGOLOGY

REVIEW ARTICLE
Predictive factors for the postlaryngectomy pharyngocutaneous fistula development: systematic review^{1,2,3,4}

Authors: Luciana Botelho Cavatini¹, Marilide Monteiro Soares², Teresa Henriques³, Eurico Monteiro⁴, Carla Isabel Ferreira Pinto Ribeiro⁴

From: 1Hospital de Especialidades Universidade Federal de Pernambuco (UFPE), Faculdade de Medicina de Pernambuco (FAMED), Pernambuco; 2Hospital de Especialidades Universidade Federal de Pernambuco (UFPE), Faculdade de Medicina de Pernambuco (FAMED), Pernambuco; 3Hospital de Especialidades Universidade Federal de Pernambuco (UFPE), Faculdade de Medicina de Pernambuco (FAMED), Pernambuco; 4Hospital de Especialidades Universidade Federal de Pernambuco (UFPE), Faculdade de Medicina de Pernambuco (FAMED), Pernambuco

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Results—Fifty-five patients developed a pharyngocutaneous fistula (overall incidence, 21%) in a retrospective review of 259 patients who underwent total laryngectomy between 2003 and 2010. Risk factors for fistula formation were analyzed, including lary, comorbidities, and operative details, which included use of a free flap neck dissections, margin status, and preoperative tracheostomy. The length of postoperative stay, study results, and fistula management strategies were analyzed.

Conclusions—Our data confirmed that previous radiotherapy and hypothyroidism, particularly in salvage laryngectomy patients, are important significant predictors of postoperative pharyngocutaneous fistula. The use of a postoperative barium swallow in these patients may be useful but was not found to be highly sensitive in predicting who will develop a clinically evident leak and should be used with caution.

Some patients more likely to develop fistulae...

- Previous radiation
- Hypothyroid
- Primary closure in setting of salvage surgery
- Nutritional depletion

Patients with high risk for fistula formation:

- Preoperative counseling
- Modification of operative technique
- Prehab and Rehab implications



Question 3

Following a total laryngectomy, which of the following is an important risk factor related to salivary fistula formation?

- a) Age
- b) History of neck radiation
- c) Stage of tumor
- d) Use of perioperative antibiotics



Answer 3

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Patients with prior h/o head and neck radiation are at high risk for salivary fistula formation



Early Speech Rehabilitation

- Patients are unable to speak normally after procedure
 - Require notepad/white board
 - iPad/ computer voice synthesizers
 - Speech therapy consulted
- Alternative modes of speech
 - Electrolarynx
 - Tracheo-esophageal puncture (TEP)
 - Esophageal speech (burp)



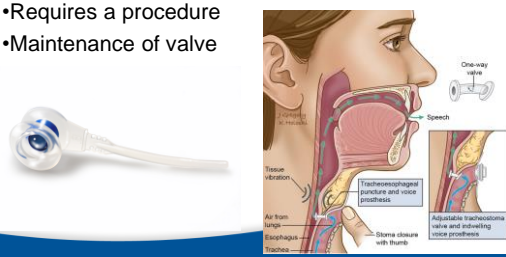
Early Speech Rehabilitation

- Alternative modes of speech: Electrolarynx
- Reliable
- No surgery needed for use
- Mechanical sound



Early Speech Rehabilitation

- Alternative modes of speech: Tracheo-esophageal puncture (TEP)
- Reliable
- Requires a procedure
- Maintenance of valve



Other issues & physical changes

- Showers- water can easily pass into airway (unless a shower cover is used)
- Can't swim
- Unable to bear down: Manage constipation
- Smell impaired: Can't sniff -> Taste affected
- Body Image issues
- Intimacy issues
- Depression



Discharge Readiness

- Early patient and caregiver engagement
- Teach self cares
- Stoma and incision care
- Availability and use of:
 - Suction
 - Humidification
 - Stoma supplies
- Speech rehabilitation
- Access to help
 - Physician team
 - Registration with local fire and rescue dept.



Resources

McGrath BA, Bates L, Atkinson D, Moore JA; National Tracheostomy Safety Project. Multidisciplinary guidelines for the management of tracheostomy and laryngectomy airway emergencies. *Anesthesia* 2012 Sep; 67(9):1025-41

Home care booklet: Laryngectomy. Iowa Protocols. <https://medicine.uiowa.edu/iowaprotocols/laryngectomy-and-after-drawings-and-home-care-booklet>. Accessed September 27, 2017

Perspectives in Nursing: Post-operative care of the laryngectomy patient. Website: <http://www.perspectivesinnursing.org/assets/perspectives5.pdf>. Accessed September 27, 2017

Support for People with Oral and Head and Neck Cancer (www.spo-hnc.org)

International Association of Laryngectomees (www.theial.com)

American Cancer Society (www.cancer.org)

